This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of claims:**

Claims 1-13 (Canceled)

14. (New) A mechanical and electrical connection system joining the ends of two approximately coaxial shafts moving along an overall axial direction and capable of transmitting approximately axial forces comprising:

a driving shaft connected to an axial translation device and having an end comprising an annular groove proximate to an axial end extension of axial height H1;

a driven shaft having an end comprising an annular groove proximate to an axial end extension of axial height H2; and

a generally cylindrical coupling for connecting the ends, the coupling including:

a first annular shoulder with a surface having a shape complementary to the shape of the annular groove proximate to the axial extension of the driving shaft without clearance;

a second annular shoulder with a surface having a shape complementary to the shape of the annular groove proximate to the axial extension of the driven shaft, a radial clearance provided between the complementary surfaces of the second annular shoulder and the annular groove of the driven shaft; and

a cavity for receiving the axial extensions of the shafts and having an axial height, the axial height of the cavity strictly greater than the sum of the axial heights H1 and H2 of the axial end extensions,

the axial end extension of the driving shaft and the axial end extension of the driven shaft remaining in mechanical and electrical contact due to an elastic conducting means.

15. (New) The system according to claim 14, wherein the elastic conducting means is a metallic helical spring.

16. (New) The system according to claim 14, wherein the annular groove of the driving shaft includes two walls perpendicular to the axis of the driving shaft and separated by a distance of about axial height H0, and a bottom in the form of a cylindrical surface with diameter C coaxial with the axis of the driving shaft, and

wherein the first annular shoulder is also provided with two walls perpendicular to the axis of the coupling, the two walls separated by a distance H0 - $\varepsilon$, where $0.05 \text{ mm} \leq \varepsilon \leq 0.2 \text{ mm}$, and a cylindrical wall having a diameter C + $\varepsilon'$, where $0.05 \text{ mm} \leq \varepsilon' \leq 0.2 \text{ mm}$.

17. (New) The system according to claim 14, wherein the annular groove of the driven shaft includes two walls perpendicular to the axis of the driven shaft and separated by a distance of about axial height H3, and a bottom in the form of a cylindrical surface with diameter ∅G coaxial with the axis of the driven shaft, and wherein the second annular shoulder has a complementary shape to the coupling including two walls perpendicular to the axis of the coupling and separated by a distance H4 strictly less than H3, and a cylindrical wall with a diameter strictly greater than the diameter of the annular groove of the driven shaft.

18. (New) The system according to claim 14, wherein there is a radial clearance J1 between an outer surface of the axial end extension of the driven shaft and the wall of the cavity formed in the coupling for holding the axial end extensions of the shafts.

19. (New) The system according to claim 14, wherein the difference between the axial height of the cavity and the sum of the axial heights H1 and H2 corresponds to a maximum clearance J2 between the shaft ends, and the difference between the axial height H3 of the annular groove of the driven shaft and the axial height H4 of the second annular shoulder of the coupling corresponds to a maximum clearance J4 strictly greater than the maximum clearance J2 between the shaft ends.

20. (New) The system according to claim 14, wherein the axial end extension of the driving shaft comprises a projection having an end with a transverse wall that occupies a convex surface of revolution about the axis of the driving shaft, the axial end extension of the driven shaft comprising a projection having an end with a transverse wall with a profile such that when

the two shafts are put into contact, the area of contact between the projection and the projection of the driving shaft is located as close as possible to the axis of the driving shaft.

21. (New) The system according to claim 20, wherein the axial end extension of the driven shaft comprises a projection having an end with a transverse wall that occupies a convex surface of revolution about the axis of the driven shaft, the curvature at its mid-point greater than the curvature of the transverse wall of the projection of the driving shaft.

22. (New) The system according to claim 14, wherein the axial end extensions of each shaft include a base located between the annular groove and the projection, the base and the projection arranged such that the elastic conducting means can bear on each of the shafts to provide continuous electrical contact between the two shafts.

23. (New) The system according to claim 14, wherein the end of the driving shaft comprises an annular groove and an axial end extension adjacent one another, the cylindrical base of the axial end extension having a diameter greater than the diameter of the annular groove, a transverse wall being formed to contact the first shoulder of the coupling, and

wherein the driven shaft comprises an annular groove and an axial end extension adjacent one another, the cylindrical base of the axial end extension having a diameter greater than the diameter of the annular groove, a transverse wall being formed to contact the second shoulder of the coupling, the second shoulder separated from the first shoulder, the first and second shoulders defining the cavity within the coupling.

24. (New) The system according to claim 14, wherein the coupling comprises two shells in the form of half cylinders comprising the first shoulder and the second shoulder on their respective inner faces, the two shells placed to have the first shoulder and the second shoulder facing the annular grooves in the driving shaft and the driven shaft and fixedly held by a cylindrical sleeve slid onto one end of one of the shafts.

25. (New) The system according to claim 24, wherein the sleeve is fixed at one end using a shoulder that provides a stop for the shells and fixed at the other end by attachment means securing each shell to the sleeve.

26. (New) The system according to claim 25, wherein the attachment means is one or more fasteners selected from the group consisting of a pin passing through the sleeve, a retaining ring, a nut, and a needle screw.

27. (New) Electrolytic aluminum production pot equipment comprising a mechanical and electrical connection system joining the ends of two approximately coaxial shafts moving along an overall axial direction and capable of transmitting approximately axial forces comprising:

a driving shaft connected to an axial translation device and having an end comprising an annular groove proximate to an axial end extension of axial height H1;

a driven shaft having an end comprising an annular groove proximate to an axial end extension of axial height H2, the end of the driven shaft contacting the end of the driving shaft; and

a generally cylindrical coupling for connecting the ends, the coupling including:

a first annular shoulder with a surface having a shape complementary to the shape of the annular groove proximate to the axial extension of the driving shaft without clearance;

a second annular shoulder with a surface having a shape complementary to the shape of the annular groove proximate to the axial extension of the driven shaft, a radial clearance provided between the complementary surfaces of the second annular shoulder and the annular groove of the driven shaft; and

a cavity for receiving the axial extensions of the shafts and having an axial height, the axial height of the cavity strictly greater than the sum of the axial heights H1 and H2 of the axial end extensions,

the axial end extension of the driving shaft and the axial end extension of the driven shaft remaining in mechanical and electrical contact due to an elastic conducting means.

28. (New) A device for breaking a surface crust formed on a solidified bath and for measuring the temperature and level of electrolyte in a pot during the production of aluminum

by fused bath electrolysis of alumina dissolved in the electrolyte, the device comprising a mechanical and electrical connection system joining the ends of two approximately coaxial shafts moving along an overall axial direction and capable of transmitting approximately axial forces comprising:

a driving shaft connected to an axial translation device and having an end comprising an annular groove proximate to an axial end extension of axial height H1;

a driven shaft having an end comprising an annular groove proximate to an axial end extension of axial height H2, the end of the driven shaft contacting the end of the driving shaft; and

a generally cylindrical coupling for connecting the ends, the coupling including:

a first annular shoulder with a surface having a shape complementary to the shape of the annular groove proximate to the axial extension of the driving shaft without clearance;

a second annular shoulder with a surface having a shape complementary to the shape of the annular groove proximate to the axial extension of the driven shaft, a radial clearance provided between the complementary surfaces of the second annular shoulder and the annular groove of the driven shaft; and

a cavity for receiving the axial extensions of the shafts and having an axial height, the axial height of the cavity strictly greater than the sum of the axial heights H1 and H2 of the axial end extensions,

the axial end extension of the driving shaft and the axial end extension of the driven shaft remaining in mechanical and electrical contact due to an elastic conducting means,

wherein the driving shaft is a rod of a pneumatic crustbreaking jack and the driven shaft is an extension rod supporting a chisel that plunges into the electrolyte.